

Aug. 22, 1961

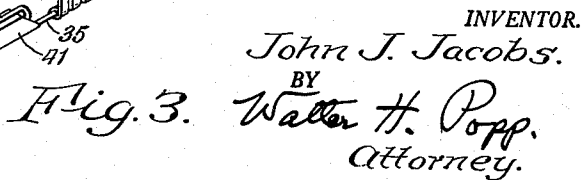
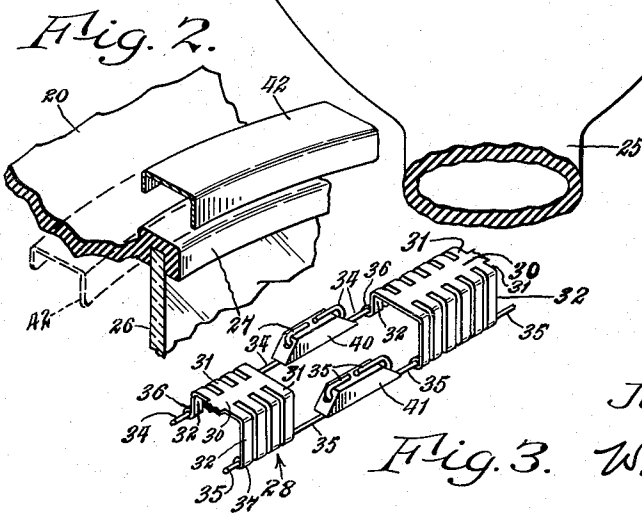
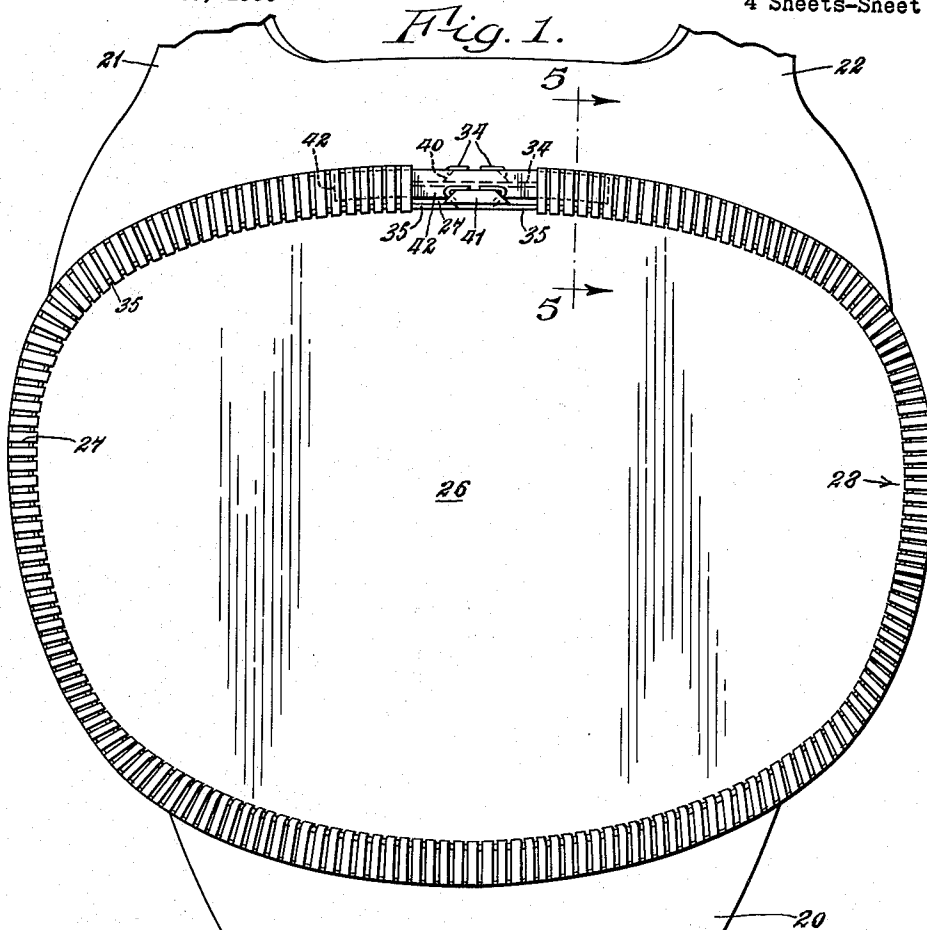
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2,996,722

FACE MASK

Filed March 19, 1956

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

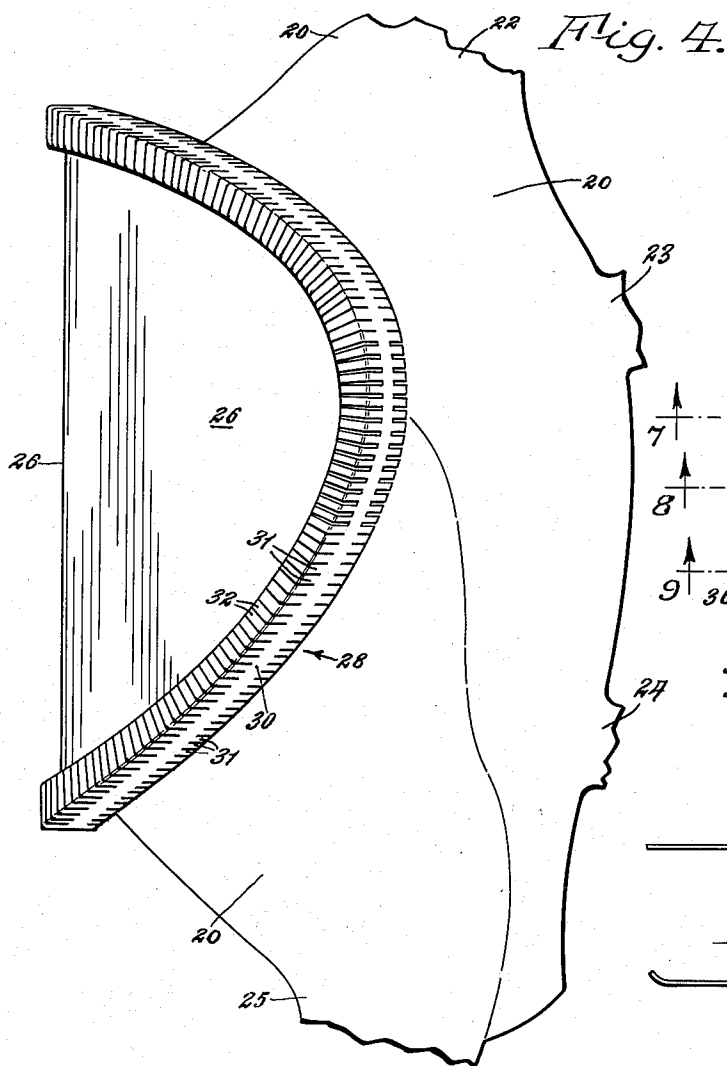


Fig. 6.

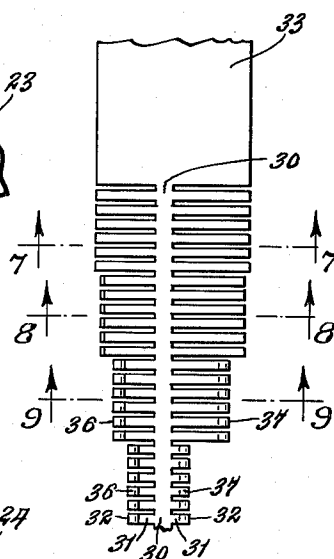


Fig. 7.

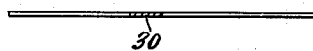


Fig. 8.

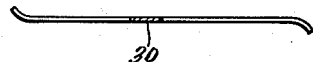


Fig. 9.

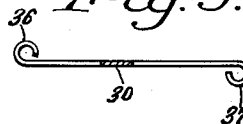


Fig. 5.

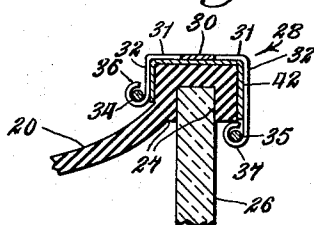
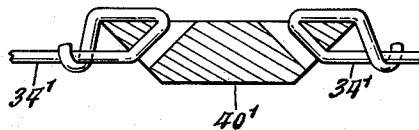


Fig. 10.



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Fig. 11.

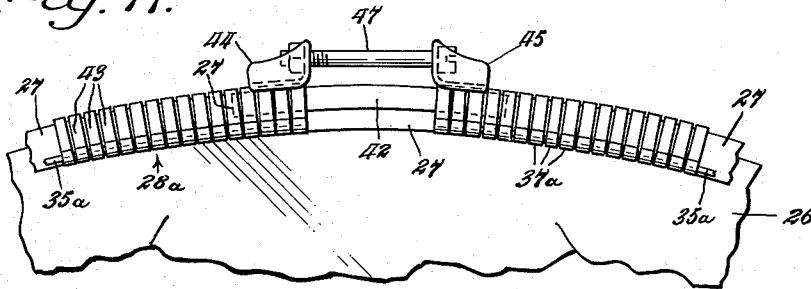


Fig. 12.

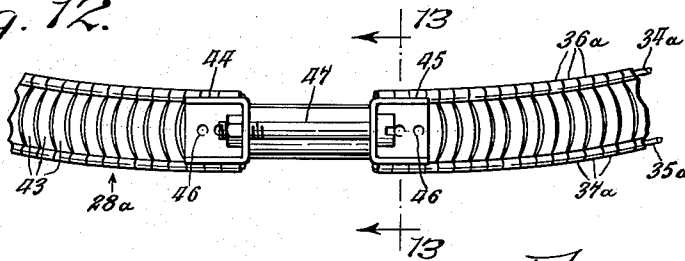


Fig. 14.

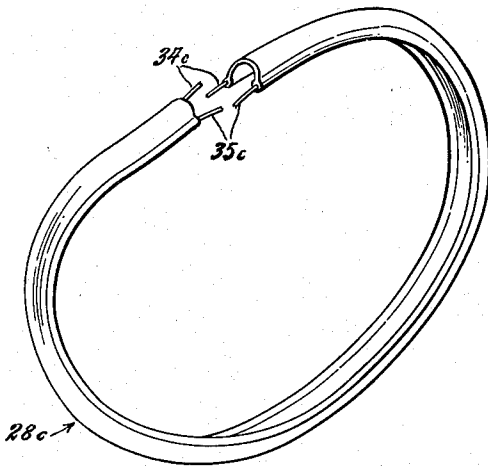


Fig. 13.

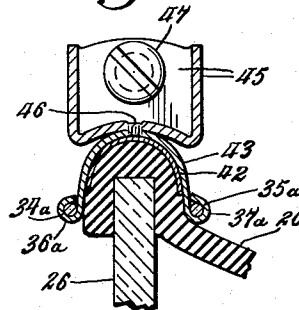


Fig. 15.



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Fig. 16.

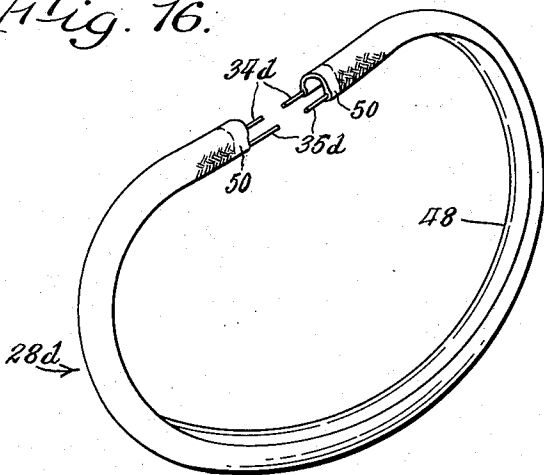


Fig. 17.

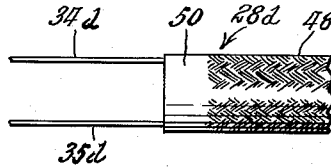


Fig. 18.

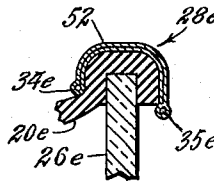


Fig. 19.

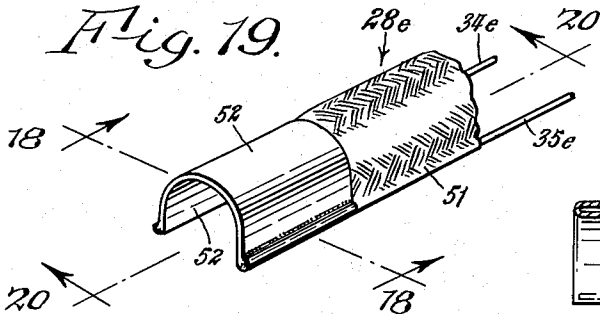


Fig. 20.

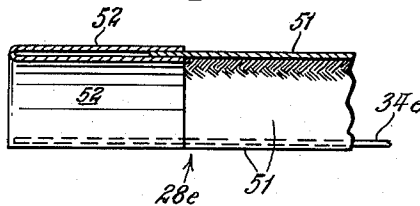


Fig. 21.

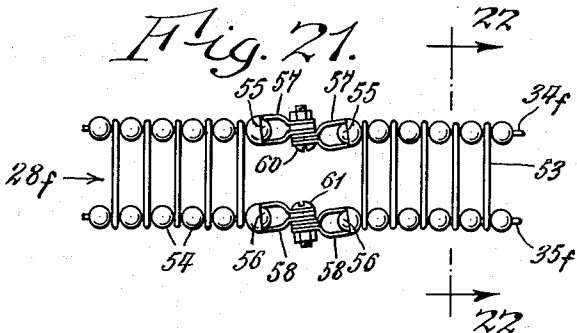
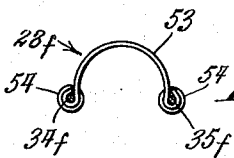


Fig. 22.



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FACE MASK

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5 Claims. (Cl. 2-14)

This invention relates to a face mask assembly, and more particularly to a face mask having a transparent, sheet lens which is curved cylindrically and is of curvilinear contour.

The principal object of the invention is to provide a securing means for a lens of this type which will be detachable; light in weight; inexpensive to manufacture; and attractive in appearance.

Other collateral objects of the invention and practical solutions thereof are described in the following description and in the accompanying drawings wherein:

FIG. 1 is a diminutive, fragmentary, front elevation of a mask 20 provided with one form of my improved lens securing means.

FIG. 2 is a fragmentary, perspective view thru the upper part of said mask 20 minus the lens securing means.

FIG. 3 is a fragmentary, perspective view of the type of securing strip 28 illustrated in FIGS. 1-9 inclusive.

FIG. 4 is a diminutive, fragmentary, side elevation of the mask 20 which is shown in FIG. 1.

FIG. 5 is a fragmentary, vertical section thereof taken on line 5-5, FIG. 1.

FIG. 6 is a schematic view illustrating the successive steps in the fabricating of the securing strip 28 of FIGS. 1-9 inclusive.

FIGS. 7, 8 and 9 are transverse sections thereof taken on correspondingly numbered lines of said FIG. 6.

FIG. 10 is an enlarged, longitudinal section thru one of the clamping blocks 40 showing the same used in a modified manner to clamp together the ends of its companion draw wire 34.

FIG. 11 is a fragmentary, front elevation of a mask showing a modified form of lens securing means.

FIG. 12 is a fragmentary, top plan thereof.

FIG. 13 is a fragmentary, vertical section thru the form of lens securing means shown in FIGS. 11 and 12, taken on line 13-13, FIG. 12.

FIG. 14 is a diminutive, perspective view of another modified form of lens securing strip.

FIG. 15 is a transverse section thereof.

FIG. 16 is a diminutive, perspective view of still another modified form of lens securing strip.

FIG. 17 is an enlarged, top plan of one of the ends thereof.

FIG. 18 is a fragmentary, vertical section thru yet another form of lens securing strip, showing the same in association with the lens and the lens channel of the mask, taken on line 18-18 FIG. 19.

FIG. 19 is an enlarged perspective view of one of the ends thereof.

FIG. 20 is an enlarged, vertical, longitudinal section thru one end thereof, taken on line 20-20 FIG. 19.

FIG. 21 is a fragmentary top plan of another form of lens securing strip.

FIG. 22 is a vertical, transverse section thereof taken on line 22-22 FIG. 21.

The forms of the invention shown in the accompanying drawings will be described exactly as they are illustrated, but it is to be understood that the scope of the invention is not to be measured by the structure thus disclosed and described but is to be measured by the scope of the claims which are appended.

Referring first to the form of the invention shown in FIGS. 1-9 inclusive, the numeral 20 represents a mask

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which is made of flexible, molded rubber and is adapted to cover the eyes, nose and mouth of the wearer and is adapted to be secured to the wearer's head by a pair of upper head straps 21 and 22, intermediate head straps 23, and lower head straps 24. Formed in the lower forward part of the mask is a breathing tube 25.

The lens 26 is constructed of sheet material such as transparent plastic or glass, and is of cylindrical shape as shown in FIG. 4, and has a curvilinear periphery of approximately oval form as shown in FIG. 1.

Such a form of lens distorts the wearer's view less than an ordinary flat lens and hugs the face of the wearer closer, and hence is more comfortable, compact and aesthetic, but is, at the same time, more difficult to detachably secure to a mask than is the ordinary flat lens.

Formed at the front, upper part of the mask 20 is an integral, curvilinear channel 27 of approximately oval form (as seen in FIG. 1), and is so formed that its interior opens inwardly (as seen in FIG. 2 and 5). This interior of said channel 27 is adapted to resiliently receive the dually-curved periphery of the lens 26.

This resilient channel 27 is firmly but detachably secured to the lens 26 as follows:

Embracing the outer faces of said channel 27 is a sheet metal securing strip 28 which is U-shaped in cross section (see FIGS. 3 and 5) and whose narrow, central part 30 is continuous from one end of the securing strip to the other, but whose lateral portions 31 and flanges 32 are serrated. Thus the outer faces of the channel 27 are snugly embraced by the securing strip 28, and yet the latter taken as a whole, is flexible both outwardly and inwardly because of the sheet metal nature of its medial or central part 30, and, in addition, is also laterally flexible because of the narrowness of said medial or central part 30. This permits the use of a lens 26 whose peripheral edge curves laterally in any direction relatively to a tangent touching the periphery at any point on said periphery.

The successive steps in the forming or stamping out of this securing strip 28 from the sheet metal strip 33 is shown schematically in FIGS. 6-9 inclusive, and the final product in FIGS. 5 and 3 (and also in FIGS. 1 and 4).

This securing strip 28 is tightly wrapped around the outer faces of the channel 27 by a pair of soft, stainless-steel wires 34 and 35 which are slidably received within the pairs of sheet metal loops 36 and 37 that are formed at the distal, inner ends of the lateral serrations or flanges 32 of the securing strip 28.

The opposite ends of these wires 34 and 35 are clamped together by the employment of a pair of clamping blocks 40, 41 whose outer end portions are diagonally drilled to receive said ends of said wires, and whose end faces are beveled. This construction prevents the ends of the wires from pulling loose; this effect being produced because of the fact that said wire ends are compelled to bend sharply as they change direction in the various parts of the clamping blocks 40, 41.

Before, however, passing the ends of said wires 34, 35 thru the apertures of and around the corners of said clamping blocks 40, 41, a channel-shaped slide strip 42 is pressed into place on the mask channel 27 under the adjacent ends of the securing strip 28. This prevents said ends of said securing strip from digging into the outer, soft, rubber surface of the channel 27 when these ends are drawn toward each other by the tightening of the clamping wires 34, 35.

It should be understood that, when this clamping operation has been completed, the somewhat unsightly gap between the opposite ends of the securing strip 28 may be concealed, for the sake of appearance, by a suitable con-

cealing strip (not shown) which is constructed somewhat like the slide strip 42 and snaps resiliently around the adjacent outer faces of the adjacent ends of the securing strip 28.

FIG. 10 shows one of the clamping blocks (40') used in a modified manner to clamp together and hold in clamped position the adjacent ends of its companion-wire (34'). This method of clamping the ends of the clamping wires together is of particular advantage where the lateral free space for the accommodation of the blocks and clamping wires is quite limited and where, also, the clamping wire is so soft as to require being bent very sharply if it is to avoid being pulled loose.

FIGS. 11-13 show a modified form 28a of securing strip. Here the medial or central, continuous part 30 of the securing strip 28 of FIGS. 1-9 is omitted and, instead, this securing strip 28a is composed of a considerable number of independent U-shaped saddles 43 with the loops 36a and 37a at their distal inner ends slidably receiving the clamping wires 34a, 35a.

A modified clamping means is required for this modified securing strip 28a of FIGS. 11-13. Here, a pair of brackets 44 and 45 are spot welded at 46 to the endmost of the saddles 43 and are drawn or clamped together by a clamp bolt 47. The ends of the clamping wires 34a, 35a are, of course, secured by welding or soldering to the aforesaid endmost saddles 43.

FIGS. 14 and 15 illustrate a securing strip 28c which is molded of plastic and has slidably arranged therein a pair of clamping wires 34c, 35c. Fairly satisfactory results may, however, be obtained (if a suitable plastic is employed) if these clamping wires are imbedded solidly and fixedly in the edge portions of the securing strip 28c.

FIG. 16 and 17 illustrate a modified form of lens securing strip 28d which is constructed from a tube whose walls consist of braided metal wire, the tube being folded in upon itself so as to be U-shaped in cross section to form a sleeve 48, with a pair of tension wires 34d and 35d slidably received within the bights of the folds of said sleeve. The strands of wires at the opposite or free ends of this sleeve 48, i.e., of the securing strip 28d, are soldered together at 50 so as to prevent the individual wires of sleeve 48 from unravelling. This soldering is effected before the tension wires 34d, 35d are placed in position, i.e., the soldered portion 50 is not soldered to said wires which are therefore free to slide in the bights of the sleeve 48.

After the securing strip 28d has been placed around the periphery of the U-shaped channel of the mask, it is drawn tightly therearound and then firmly held in place by first drawing the opposite ends of the tension wire 34d together, and then twisting them together. Thereafter the opposite ends of the companion wire 35d are drawn together and then twisted together.

In FIGS. 18-20 the modified securing strip 28e is also constructed from a braided metal tube as in FIGS. 16 and 17 and is folded upon itself to form a sleeve 51 which is of U-shaped cross section and has slidably received within its bights a pair of tension wires 34e, 35e. The opposite ends of said sleeve 51 are soldered to a pair of double-walled ferrules 52 which, like the sleeve 51, are U-shaped in cross section. In fabricating this form of the invention, the tension wires 34e, 35e are first soldered to one of the ferrules 52. Then this ferrule, together with the braided wire sleeve 51, is placed on a curvilinear form (not shown) so as to assume a shape approximately like that shown in FIG. 16. The other ferrule 52 is then soldered to the other end of the sleeve

51 and also to its tension wires 34e, 35e. Then when the entire securing strip 28e is placed in position on the face mask 20e and around the lens 26e, the two ferrules 52 are clamped together by means not deemed necessary to illustrate.

In FIGS. 21 and 22 the lens securing strip 28f is constructed primarily of a plurality of U-shaped, wire loops 53 which are curled at their distal ends to receive a pair of tension wires 34f, 35f. These loops 53 are maintained in spaced relationship by a plurality of spacing beads 54 whose bores receive the tension wires 34f, 35f. The endmost beads 55 and 56 are soldered to the ends of the tension wires and are received within the semi-spherical pockets of companion stirrups 57, 58 whose distal ends are clamped together by a pair of bolts 60, 61.

I claim:

1. A face mask assembly comprising: a curvilinear, transparent lens; a mask having an inwardly-facing channel having outer faces and an inner groove which receives the peripheral edge of said lens; an inwardly and laterally flexible lens securing strip of U-shaped cross section which receives, within its interior, the outer faces of said channel, the flanges of said U-shaped securing strip being serrated; draw wires arranged longitudinally in the two flanges of said U-shaped securing strip; and means for clamping the ends of said draw wires together.

2. A face mask assembly comprising: a curvilinear, transparent lens; a mask having an inwardly-facing channel having outer faces and an inner groove which receives the peripheral edge of said lens; an inwardly-facing U-shaped slide strip arranged over the outer faces of one portion of said channel; a lens securing strip of U-shaped cross section which receives the outer faces of said channel and having its opposite ends overlapping said slide strip; and means for clamping the ends of said securing strip together.

3. A face mask assembly comprising: a curvilinear, transparent lens; a mask having an inwardly-facing channel whose inner groove receives the peripheral edge of said lens; an inwardly-facing U-shaped slide strip arranged over one portion of said channel; a lens securing strip of U-shaped cross section which is inwardly and laterally flexible and which receives the outer faces of said channel and having its opposite ends overlapping said slide strip; draw wires arranged in the two flanges of said U-shaped securing strip; and means for clamping the ends of said draw wires together.

4. As in claim 1 with a pair of clamping blocks, and with the ends of the draw wires passing obliquely thru said clamping blocks and secured to said clamping blocks.

5. As in claim 1 with a pair of clamping blocks having bevelled ends, and with the ends of the draw wires passing obliquely thru said clamping blocks and into the bevelled ends of said blocks and secured to said blocks.

References Cited in the file of this patent

UNITED STATES PATENTS

1,385,583	Parsons	July 26, 1921
1,686,516	Christensen	Oct. 9, 1928
2,036,850	Bullard	Apr. 7, 1936
2,158,693	Dym	May 16, 1939
2,359,506	Battley	Oct. 3, 1944
2,375,147	Teague	May 1, 1945

FOREIGN PATENTS

381,099	Great Britain	Sept. 29, 1932
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